Amendments to the Claims:

Please cancel claims 31-32 and 49-51, and add new claims 52-58. This listing of claims will replace all prior versions, and listings, of claims in the application:

1-28. (Canceled)

29. (Previously Presented) A method of producing L-β-lysine, comprising:

(a) culturing a prokaryotic host cell comprising an expression vector that encodes lysine 2,3-aminomutase in the presence of L-lysine, wherein the cultured host cell expresses lysine 2,3-aminomutase, and

(b) isolating L-β-lysine from the cultured host cells.

30. (Previously Presented) A method of producing L-β-lysine, comprising:

(a) incubating L-lysine in a solution containing substantially pure lysine 2,3-aminomutase, said solution containing all cofactors required for lysine 2,3-aminomutase activity; and

(b) isolating L-β-lysine from the incubation solution.

31-35. (Canceled)

36. (Previously Presented) The method of claim 29 wherein the vector that encodes lysine 2,3-aminomutase has a nucleic acid sequence of SEQ ID NO: 3.

37. (Previously Presented) The method of claim 29 wherein the isolated L-β-lysine is enantiomerically pure.

38. (Previously Presented) The method of claim 30 wherein the isolated L-β-lysine is enantiomerically pure.

39. (Previously Presented) The method of claim 30 wherein the cofactors required for lysine 2,3-aminomutase activity comprise:

(i) at least one of ferrous sulfate or ferric ammonium sulfate;

(ii) pyridoxal phosphate;

(iii) at least one of dehydrolipoic acid, glutathione or dithiothreitol;

(iv) S-adenosylmethionine; and

(v) sodium dithionite.

40. (Previously Presented) A method of producing L-β-lysine, comprising:

(a) immobilizing lysine 2,3-aminomutase on a suitable support;

(b) activating the lysine 2,3-aminomutase with cofactors required for lysine 2,3-aminomutase activity; and

(c) contacting L-lysine with the immobilized lysine 2,3-aminomutase to produce L-β-lysine.

41. (Previously Presented) The method of claim 40 wherein the L-lysine is contacted with the immobilized lysine 2,3-aminomutase for a sufficient amount of time to produce enantiomerically pure L-β-lysine.

42. (Previously Presented) The method of claim 37 further comprising separating the L-β-lysine from the L-lysine.

43. (Previously Presented) The method of claim 42 wherein the separation of the L-β-lysine from the L-lysine is achieved using high performance chromatography.

44. (Previously Presented) The method of claim 37 wherein the process is a continuous process.

45. (Previously Presented) The method of claim 37 wherein the cofactors required for lysine 2,3-aminomutase activity comprise:

(i) at least one of ferrous sulfate or ferric ammonium sulfate;

(ii) pyridoxal phosphate;

(iii) at least one of dehydrolipoic acid, glutathione or dithiothreitol;

(iv) S-adenosylmethionine; and

(v) sodium dithionite.

46. (Previously Presented) The method of claim 37, wherein the lysine 2,3-aminomutase has an amino acid sequence selected from the group consisting of (i) SEQ ID NO: 4-and (ii) a conservative amino acid variant of SEQ ID NO: 4.

47. (Previously Presented) A method of producing L-β-lysine, comprising:

(a) incubating L-lysine in a solution containing purified lysine 2,3-aminomutase, wherein the lysine 2,3-aminomutase has an amino acid sequence selected from the group consisting of (i) SEQ ID NO: 4, and (ii) a conservative amino acid variant of SEQ ID NO: 4, said solution containing all cofactors required for lysine 2,3-aminomutase activity; and

(b) isolating L-β-lysine from the incubation solution.

48. (Previously Presented) The method of claim 47, wherein step (b) further comprises isolating L-β-lysine from L-lysine via chromatography.

49-51. (Canceled)

52. (New) The method of claim 29 wherein the prokaryotic host cell is cultured in the presence of cobalt.

53. (New) The method of claim 29 wherein the lysine 2,3-aminomutase is a prokaryotic lysine 2,3-aminomutase.

54. (New) The method of claim 30 further comprising purifying the lysine 2,3-aminomutase in the presence of L-lysine to obtain substantially pure lysine 2,3-aminomutase.

55. (New) The method of claim 30 further comprising purifying the lysine 2,3-aminomutase in the presence of cobalt to obtain substantially pure lysine 2,3-aminomutase.

56. (New) The method of claim 30 further comprising purifying the lysine 2,3-aminomutase under anaerobic conditions to obtain substantially pure lysine 2,3-aminomutase.

57. (New) The method of claim 30 wherein the lysine 2,3-aminomutase is a prokaryotic lysine 2,3-aminomutase.

58. (New) A method of producing L-β-lysine, comprising:

(a) incubating L-lysine in a solution containing substantially pure lysine 2,3-aminomutase having an iron-sulfur cluster, said solution containing all cofactors required for lysine 2,3-aminomutase activity; and

(b) isolating L-β-lysine from the incubation solution.